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## BOOK REVIEWS.

KARL ERNST VON BAER UND SEINE WELTANSCHAUUNG. Von *Dr. Remigius Stölzle*,  
Professor der Philosophie an der Universität Würzburg. Regensburg: Na-  
tionale Verlagsanstalt. 1897. Pages, 687. Price, M. 9.

Karl Ernst von Baer was born in Esthonia, on the 17th of February, 1792, of an old German family which had emigrated from the Fatherland to Russia in the middle of the sixteenth century. His instruction prior to his fifteenth year was confided mainly to private tutors; afterwards it was continued at the academy in Reval, and at the Universities of Dorpat, Vienna, Würzburg, and Berlin. In 1814 he became doctor of medicine at Dorpat, but being dissatisfied with the facilities offered there, he proceeded to Vienna, Würzburg, and Berlin, where his studies gradually tended away from medicine to natural history and biology. It was at Würzburg that he enjoyed the opportunity of studying under Döllinger, who lectured on comparative anatomy, and of intercourse with the philosophical botanist Nees von Esenbeck, who found little difficulty in winning the interest of the gifted young scientist for the fascinating speculations of the *Naturphilosophie*, then captivating the best intellects of Germany. In 1817 he accepted the position of professor at the university of Königsberg, where he remained seventeen years unfolding and publishing his greatest discoveries. His researches, consonantly with the universal character of his mind, covered an enormous field, and embraced animal and human anatomy, zoölogy and anthropology, paleontology, and much work in practical social fields. It was here that he developed his main ideas of scientific embryology of which he is regarded the founder,—notably his doctrine of types of organisation (a development and verification of Cuvier's work), his discovery of the ovarian ovum of mammals which definitively settled the old controversy between evolution and epigenesis, at least in its old conception, his discovery that the embryos of the higher vertebrates repeat in development the embryonic forms of their lower predecessors, the significance of which was made clear by Darwin's researches, and was afterwards extended into Haeckel's fundamental biogenetic law, etc. In 1834 he accepted a call to St. Petersburg, where, despite his dislike of his surroundings, he developed an enormous activity. His geographical and ethnographical researches were alone sufficient to have made a scientific reputation.

Besides this, he continued his old work, made extensive scientific journeys into remote parts of Russia, and wrote books of travel. His participation in the practical, actual work of life was also extremely varied during his St. Petersburg sojourn, and marks a characteristic side of the man's life. He combated with might and main the seclusiveness of German professors, and contrasted their shyness to appearing in public life and participating in public instruction, to the contrary state of affairs in England and France. On all practical questions and enterprises his advice was sought and given with a wealth of knowledge probably second only to that of Humboldt in his age. He spent the last years of his long life in Dorpat, engaged to the end in unremitting and fruitful labors. He died there in 1876, leaving behind him a legacy to humanity which few men can equal. At the celebration of the sixtieth anniversary of his doctorate he modestly says in words which remind us of Helmholtz's utterances on a similar occasion: "I have discovered much, and my success has been great. But when I think of the manner in which I have accomplished it all, I can only say that it was through a fortunate combination of circumstances, and through the favorable shaping of my life."

This attributing of success to destiny in life, which marks the utterances of so many great discoverers, is in Baer's case especially characteristic. He had in him, we may say, a tendency to fatalism which explains much of his philosophical bias. For example, his position in St. Petersburg having from its inappropriate environment been uncongenial to him, he remarks that he had never in his life accomplished anything by his own free will and by his own initiative; all that he had achieved had been thrown in his way by chance. It was chance that had drawn him away from medicine to science, chance that he became prosector in Königsberg, chance that by his friend and colleague's disappearance from the field he had become a full professor and so been put in a position to make his discoveries. As our author, Professor Stölzle, says, "He does not refer the happenings of his life to Divine Providence, nor to his own independent action, but to fate," exemplifying Schelling's saying that "nearly all great men of action or thought have been at bottom fatalists."

At a time when science, from horror at the extravagance of the reigning philosophical systems, utterly repudiated all alliance with metaphysics, Baer, who had his roots in the philosophical heyday of German thought, was a philosopher with his mind constantly bent upon the universal and monistic trend of existence. He distinctly held the position, which is now a popular one with thinkers, that philosophy should be reared upon the solid foundation of special research. He was thoroughly conscious of the necessity of a systematic and unitary view of nature. He saw that there was a deep inward connexion to all things, and thus, despite its extravagant nonsense, apprehended the kernel of truth at the basis of the *Naturphilosophie*. The aim which it endeavored to realise was in his mind a legitimate aim, though the methods which it adopted were false and ridiculous; and so, while rejecting it, he gained much of value from it. He considered all sides of the phi-

losophical problem, but he was particularly engaged with the history of teleology which formed the backbone of his philosophical thought. And on this cardinal doctrine, which is of the utmost importance in philosophy and science, we must dwell at some length.

The attitude of thinkers in Baer's day towards this fundamental question was, as he conceived it, either one of slavish adherence to a totally anthropomorphic teleology or of absolute repudiation of any purpose whatever in nature. Baer repudiates the first conception no less than the second. Wherever he looks he sees finality in the world, and would hence eliminate all obscurity from the question by proposing a new terminology. He believes that most of the attacks on teleology have their ground in improperly defined terms. He objects to the use of the word "purpose" (*Zweck*), maintaining that it has an anthropomorphic connotation, that it involves the notion of voluntary conscious action and is so absolutely inapplicable to nature. We cannot say of the processes of nature, he contends, that they have a purpose. It is not the purpose of the chicken-egg to become a chicken, because there is neither consciousness nor will in the egg, nor is it the purpose of the lungs to carry off the carbon in the blood and to introduce oxygen therein, etc. Where there is no will, there can be no purpose. Baer is driven, accordingly, to seek some other word for the expression *Zweckmässigkeit* (adaptation to purposes) then in use, and after attempting the words *Zieligkeit*, *Zielmässigkeit*, *zielmässig*, he ultimately hits upon the terms *Ziel*, *Zielstrebigkeit*, *zielstrebig*, as utterly bereft of anthropomorphic connotation and as expressing the exact gist of the question. These words, which are now so common in German philosophical and scientific literature, were then quite new in the German language and were formed upon the analogy of the older terms *Zweck*, *zweckmässig* and *Zweckmässigkeit*. *Ziel* means "end, goal, or aim"; *Zielstrebigkeit* means "tendency to aims or ends," it is finality of movement or development, and by Baer's own conception of it is perhaps best explained by identifying it with the *entelechy* of Aristotle, or the principle that things bear within them the end and aim of their development. Baer reached in fact by independent reflexion and observation on the developmental history of animals the very same results at which Aristotle arrived. "The goal or aim here indicated," he says, "is the termination of the movement considered, and does not exclude in the slightest the necessity or compulsion involved; it is, in fact, by very virtue of that necessity, all the more thoroughly secured. . . . An arrow shot from a bow, assuming that all the conditions involved have been accurately determined, proceeds with absolute necessity towards its goal without any inkling of purpose." Any event of which the result is previously determined, is, according to Baer, *zielstrebig*, that is, has a tendency to a definite end.

The doctrine of finality in nature, or of adaptation to definite manifest ends, runs like a red thread through all of Baer's investigations. It finds its particular application, however, as opposed to the teleophobia of the Darwinists. Darwinism had been held in Germany as giving the final quietus to the reign of teleology in

animate nature, and such great inquirers as Helmholtz, Sachs, and Dubois-Reymond were all agreed that the supposed finality of the organic world was not the result of conscious purpose but of necessity. To this Baer objected: "If you assume necessities without aims, your necessities are unconnected with one another, and their results can only be accidents." This leads him to a discussion of the nature of accident or chance. The striking of the bull's eye of a target by a stone which has been struck by the hoof of a passing horse is not chance, but the necessary mechanical consequence of the stroke of the horse's hoof. But it was chance that the stone, of which the target was *not* the aim, did just happen to strike the bull's eye of that target. Chance, therefore, exists, and Baer concludes: "The person who tries to explain adaptation by necessity alone, without tendency to ends, accepts chance, that is, something absurd, as his explanatory principle." Chance heaped on chance a billion-fold is necessary to have produced the animate world by Darwin's theory; and that, surely, is impossible. His whole objection, in fact, resolves itself into the contention that necessity implies finality and that finality can be attained only by necessity. Necessity without finality is a contradiction and irrational.

Baer's criticism of Darwinism has perhaps not yet been appreciated, and it is doubtless true that many of the Post-Darwinian controversies which have grown out of the lacunæ in Darwin's system, were correctly foreshadowed by Baer. It could hardly be expected that a man of Baer's power and age, and with his great achievements in embryology and the theory of descent, could have taken the fresh and plastic attitude towards Darwin's views which the younger investigators of his own age took. We have only to remember here the attitude of Huygens with regard to Newton's theory of gravitation, and also the inability of Euler to grasp in its full scope Lagrange's conception of variations, although Euler had laid through many years of research the very foundations of this department of mathematics. Baer's criticisms may carry weight, but they may also have their explanation. Neither Darwin nor Baer is the less great for either having been opposed in opinion to the other. It suits with the purpose of the author of this work to reject Darwinism and in fact all theories of evolution that militate against the orthodox Christian view. It is explainable, therefore, that he adopts eagerly the utterances of some minor German naturalists who have recently pooh-pooed the theory of Darwin as something antiquated and definitively refuted. Our age bears in every department of research the signature of Darwin's thought, and it is not for pygmy epigones to belittle his significance. Truly, as Goethe saith in a profoundly ethical verse:

"Ein jeder Wallfisch hat seine Laus,  
Kann auch die seine haben."

Weismann has recently referred to these very utterances, and pricked the bubble of their pretentiousness.

It is beyond our limits to touch on Baer's valuable and revolutionary ideas in

biology and anthropology. The author of the present work has devoted the best part of this volume to the discussion of their philosophical upshot. He also has much to say upon Baer's ethical, pedagogical, and political views, and upon his philosophy of history. It remains for us to mention briefly his religious opinions.

Baer was a deeply religious and ethical personality. His teleology and wide knowledge of nature inevitably led him to a pantheistic conception which in his later years, it would seem, verged on theism. In the eighty-fourth year of his life, a few weeks before his death, he read a work by J. H. Fichte which, according to Professor Stölzle, converted him entirely to the belief in a personal God, which formerly he had expressly and strenuously denied. The grounds for the author's conclusion are, to say the least, weak. Baer was eighty-four years of age and dying when he was visited by a pastor to whom he said: "I have read Fichte's book and now believe what I have never believed before, that a monistic view of the world is not fully satisfied by the pantheistic conception." Later, on his death-bed, having asked the same pastor whether Fichte's book had interested the latter, who replied: "Yes, because it espouses the cause of the personal and living God," he answered: "Yes, the cause of the personal and living God who has predetermined all things." These were almost his last words. But they are not sufficient to make out a case of deathbed-conversion, for the evidence can be variously explained. To the author who has written this book for a definite purpose, they can be explained only in one way.

Professor Stölzle's volume is a portly one and shows painstaking research. It might have been less portly in our opinion and have contained fewer repetitions but it gives much of Baer, and all that it gives of the great inquirer's mind is intrinsically valuable and suggestive.

T. J. McC.

GERBERT : UN PAPE PHILOSOPHE D'APRÈS L'HISTOIRE ET D'APRÈS LA LÉGENDE. By F. Picavet. Paris : Ernest Leroux. 1897. Pages, 227.

While the World's Parliament of Religions and its executive successor the Religious Parliament Extension have been long and faithfully laboring to carry home to the popular and clerical mind the necessity of the study of comparative religion, and great progress in academic circles in our country has been made in this direction, such an idea has found practical scientific realisation in a school of long-standing at Paris—the *Ecole des Hautes Etudes*. In this informal institution, which is devoted to research in its most advanced forms, there has existed for ten years a *Section of Religious Sciences* which offers opportunities for instruction that should satisfy the most exacting. And that its opportunities have not been neglected is evidenced by its attendance, which shows a total of 371, of whom 123 are foreigners.

The programme includes twelve seminary courses, exclusive of the optionals : (1) The Religions of the Uncivilised Peoples, by M. Marillier ; (2) The Religions of the Farthermost Orient and of Indian America (China, Central America, etc.),